

# *ls-x*: AN INFORMATION VISUALIZATION TOOL FOR ATTRIBUTES PRESENTATION OF OBJECTS

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## INTRODUCTION

Recently, data visualization has received a great deal of attention. Furthermore, the need for better information visualization tools is widely recognized [1], [2]. One of the main reasons for better information visualization tools is the limitation of the human cognitive process. Specifically, humans have difficulty extracting meaningful information from large volumes of data [2]. The primary objective of this research project is the development of a prototype information visualization tool for attributes presentation of objects.

## TOOL DESCRIPTION

The *ls-x* enables users to visualize and browse through different attributes of an object using low cognitive load. The *ls-x* is a collaborative tool that extracts some of the attributes of objects automatically while allowing the user to fill in additional ones. Some important features of *ls-x*: i) enable the user to see in one view different attributes of the object, ii) provide low cognitive load for the user, iii) assist the user in extracting meaning about objects (utilizing the extended information window), and iv) provide a global view of the distribution of attributes of the object [2].

## AN APPLICATION

In many instances, users list the directory contents of a computer system and cannot recognize or extract meaningful information by looking at the file names (i.e., Unix *ls* command). Consider a Unix directory listing using the *ls-x* tool. Along with each file size and name, there is a value graph that demonstrates the size of the file and an icon that illustrates file type. These graphics provide an insight into the nature and contents of the directory. This column of graphical information not only assists users in observing the size of the file but also provides a visualization tool for comparing the file size with the size of other files in the directory. In addition, it shows the type of the file by using customized icon symbols (e.g., text files). There are two types of information clusters in the extended information window. The first type is automatically generated by the system. For example, path, size, creation date, last update, security, etc. The second type is filled in by the user (if desired), such as the type of icon that represents a file, project, abstract, comment, etc.

A file may be chosen by clicking in the file name, the file name is highlighted and an extended information window

displays attributes of the chosen file. When a file size is larger than the maximum space available, (special cases) the ellipses (...) will be displayed along with the graphical representation of the file to indicate an extraordinary file size. In addition, the *ls-x* tool is able to visually show the user which file has been marked for deletion (boxed) and provides a mechanism for undoing the action.

Several functions are available to organize and search the directory contents. The search option assists the user in locating any file by any combination of file attributes. Finally, context-sensitive help facility is available at any given time by clicking in the *help* icon.

## CONCLUSION

In this short paper, a prototype information visualization tool called *ls-x* is presented. *ls-x* is a simple tool that can be applied to many domains which deal with objects with various attributes. Specifically, the *ls-x* can aid the user in creating an accurate mental model of the attributes of objects by providing meaningful local and global information without overloading the user's cognitive processes [2]. Furthermore, by utilizing the *ls-x*, the navigational procedure will be easier and more efficient.

## ACKNOWLEDGEMENT

Information visualization is an ongoing research project at the Clark Atlanta University by the Human-Computer Interaction Group that is partially supported by the U. S. Army Center of Excellence in Information Science under contract number DAAL03-92-6-0377. The views contained in this document are those of the authors and should not be interpreted as representing the official policies of the U. S. Government, either expressed or implied.

## REFERENCES

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